Instituto de Astronomía
Universidad Nacional Autónoma de México
Sede Ensenada, Baja California, México

Seminario

VIERNES, 20 de Abril de 2012
10:00 hrs, Auditorio IA-Ensenada

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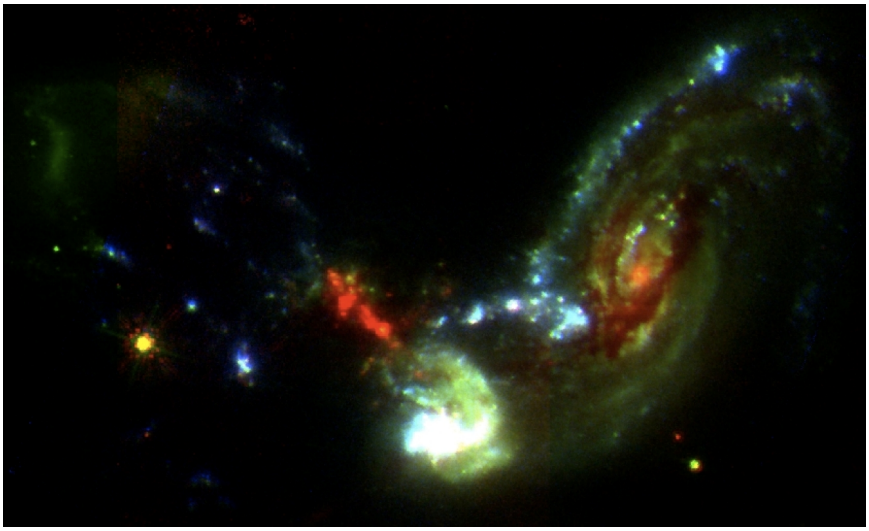
(Caltech, U.S.A)

"MID-INFRARED AND MILLIMETER SPECTROSCOPIC DIAGNOSTICS OF LOCAL LUMINOUS INFRARED GALAXIES"



I will present an analysis of of 248 luminous infrared galaxies (LIRGs) nuclei which comprise the Great Observatories All-sky LIRG Survey (GOALS) observed with the Infrared Spectrograph on Spitzer in the rest-frame wavelength range between 5 and 38 microns. I will present and compare several diagnostics effective at isolating the Active Galactic Nuclei (AGN) contribution to the Mid-infrared (MIR) (fAGN) emission using [NeV], [OIV], [NeII], the 6.2 micron PAH EQW and the shape of the MIR continuum. These diagnostics suggest that between 10 % to 13 % of local LIRGs are AGN dominated in the MIR and that AGNs contribute 12 % of the total bolometric luminosity of the entire sample. Warm H2 is detected in at least one transition in 40 % of sources. I find that the H2 scales with aromatic band emission as seen in normal galaxies. The range of total H2 to IR ratios in LIRGs is wider than in ULIRGs but similar to normal galaxies. I will also present 16 CO (1-0) high resolution (2 arcsecon ds) CO maps taken with the Combined Array for Research in Millimeter-Wave Astronomy of 16 LIRGs. We find a median mass of H2 of 2 $\times$ 1e10 Solar Masses, with media molecular gas surface densities of about 200 Solar Masses/pc^2 as well as correlations between the interaction stage and the average gas surface density and cold gas depletion times. I will compare their morphologies to those of normal galaxies and ULIRGs.